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## CASH FLOW FORECASTING

December 1992

OPERATIONS RESEARCH AND ECONOMIC ANALYSIS OFFICE



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DEPARTMENT OF DEFENSE  
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**CASH FLOW FORECASTING**

**December 1992**

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**DEPARTMENT OF DEFENSE  
DEFENSE LOGISTICS AGENCY  
OPERATIONS RESEARCH AND ECONOMIC ANALYSIS OFFICE  
CAMERON STATION  
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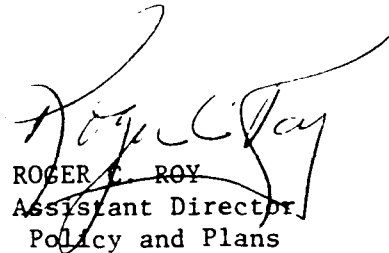
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FOREWORD

This report by the Defense Logistics Agency (DLA) Operations Research and Economic Analysis Field Operating Activity (DORO-C) at Chicago documents the development of a cash flow forecasting model for use throughout the DLA Contract Management Command (DCMC). The model was developed in response to a request from the DCMC Contract Management Division, Financial Services Branch (-AF). I would like to thank the price analysts at each of the Districts that provided feedback during the development of this model. Their interest and input will be a major contribution to the success of the model.

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## EXECUTIVE SUMMARY

The Defense Logistics Agency (DLA) Defense Contract Management Command (DCMC) Contract Management Division Financial Services Branch (-AF) performs financial capability assessments of contractors at Secondary Level Field Activities (SLFAs). DCMC currently relies heavily on ratio analysis to determine financial capability, but adding information gained from cash flow forecasting could help improve this assessment. DCMC-AF asked the DLA Operations Research and Economic Analysis Field Operating Activity (DORO-C) at Chicago to develop a cash flow forecasting model for use by price analysts DCMC-wide.

We used a model from one of the DCMC Districts as a starting point for developing the model. We solicited and received comments on this model from price analysts (recommended by DCMC-AF) at each DCMC District. The result is a cash flow model, using a spreadsheet format, acceptable for use DCMC-wide. It is a straightforward, easy to understand forecasting model that uses conventional, textbook estimating techniques. The primary input required from the contractor is a one year forecast of sales, which is already being requested by price analysts during Preaward Surveys.

Individual elements of the cash inflows and outflows are shown in the spreadsheet. Adjustments made to receipts, payments or inventories are clearly detailed. Information Screens are easily

accessed to help the price analyst determine: where to get the necessary data, how to derive default values for the missing data, and the formulas used for the forecasted elements. When printed, the model fits neatly on one sheet of paper.

We recommend that the Cash Flow Forecasting Model (CFFM) be used when the contractor cannot provide a cash flow forecast for the price analyst to evaluate. (This is primarily at the medium to small contractors where DCMC performs contract administration.) Even if the contractor provides a cash flow forecast, the CFFM can be used by the price analyst as an independent assessment of the contractor's forecasts. Cash flow forecasting, whether by the contractor, or by the price analyst (using the CFFM), should be another part of the evaluation of a contractor's financial capability to perform on a contract.

## SECTION 1

### INTRODUCTION

The Defense Contract Management Command (DCMC) Contract Management Division Financial Services Branch (-AF) performs the financial analysis portion of Preaward Surveys at the Secondary Level Field Activities (SLFAs). In Fiscal Year (FY) 1991, 4,600 Preawards were done for financial capability. The surveys are primarily done to answer the question: Does the contractor have the financial capacity to perform the contract being proposed?

DCMC currently relies heavily on ratio analysis to determine financial capability on Preaward Surveys. Some SLFAs also compare the contractors available working capital to an estimate of the working capital required to perform the proposed contract. If this analysis leaves doubt as to whether the contractor can perform on the proposal, DCMC asks the contractor for a cash flow forecast. Using cash flow forecasting to supplement the initial financial capability assessment could improve DCMC's decision making in this area.

DCMC-AF asked the Defense Logistics Agency (DLA) Operations Research and Economic Analysis Field Operating Activity (DORO-C) in Chicago to determine if a model could be developed to help price analysts do cash flow analysis during Preaward Surveys and Postaward surveillance. Part of the study was to determine if cash flow analysis is being done by any SLFAs and if there are any models that can be easily adapted for use DCMC-wide.

## SECTION 2

### METHODOLOGY

#### 2.1 GENERAL APPROACH

To help focus input from District staffs, a model developed by one of the DCMC Districts was used as a starting point for comments. Input from price analysts recommended by DCMC-AF were used to develop criteria for a model that would be acceptable DCMC-wide. The final model was developed to meet these criteria.

#### 2.2 EVALUATION CRITERIA

The model should be usable, or easily adaptable for use, at a wide variety of contractors. Larger contractors generally have more sophisticated financial systems and can generate cash flow forecasts when requested. Cash flow analysis should also be done at smaller contractors, even if DCMC price analysts have to assist the contractor or make the cash flow forecast with minimal input from the contractor. A forecast made with minimal input from the contractor should use conventional, textbook estimating techniques.

Preference should be given to an automated model that can be used on a microcomputer, for several reasons. First, it would standardize the approach to cash flow analysis and improve the accuracy and consistency of the calculations involved. Although the concept of cash flow analysis is not complex, there are many ways to compute a cash flow forecast. Secondly, an automated model could serve as a training aid, for both DCMC price analysts and contractor personnel (so they could eventually do their own cash flow analysis for DCMC to monitor). Thirdly, an automated model on a microcomputer would make cash flow analysis immediately accessible and usable by nearly all price analysts in DCMC, with the added benefit of eliminating manual computations.

Any cash flow model to be used in DCMC should be easy to use and understand. If price analysts cannot understand a model after reading the documentation through once, it is doubtful that they will take the time to learn to use it. Any model, no matter how useful and good, serves no purpose if it is not used. By the same token, if a model is easily understood, but difficult or cumbersome to use, it will also not be used.



## SECTION 3

### CASH FLOW FORECASTING MODEL (CFFM) DESCRIPTION

#### 3.1

#### OVERVIEW

The Cash Flow Forecasting Model (CFFM) is a spreadsheet template designed to be used with either Enable or Lotus 123, on a microcomputer. It develops a cash flow forecast from contractor data using mostly conventional, textbook algorithms to develop a one year cash flow projection. The required data includes current financial statements and certain projections from the contractor (most importantly, a one year forecast of Net Sales). A series of Information Screens explains: where to get the required data, how to derive default data values, and the formulas used for forecasting.

Whether you use the Enable or Lotus 123 version of the CFFM, the entire model is printed on one page by invoking a macro. See Appendix A for a sample of the model. For details on how to use the model, see Appendix B for the User's Guide.

#### 3.2

#### MODEL DEVELOPMENT

To meet the criteria that the model be easy to use and understand, the spreadsheet format was adopted. It is straightforward and not complex. The key to making this simplified format work was the ability to actually forecast the cash flows for the next year.

Many of the projections used in the CFFM are derived from a forecast of Net Sales, usually provided by the contractor. The projections made from Net Sales use mostly conventional estimating techniques. If the contractor does not provide the Net Sales forecast, the Information Screen details acceptable default estimates: same as prior year, annualized year-to-date, or trended forecast. The ultimate choice is up to the judgement of the price analyst.

Three other data elements require contractor forecasts: Capital Spending, Depreciation and Repayment of Current Debt. If the contractor cannot, or will not, provide this data, the Information Screens also suggest default values for each of these projections.

For details concerning any data elements, particularly the estimating techniques, see Appendix C for the text of the Information Screens. These Information Screens are intended as an on-line supplement to both the User's Guide and this report. (Their contents will be referenced frequently throughout this report.)

### 3.2.1

### CASH INFLOWS

Total cash coming in to the contractor accounts for Receipts from Sales, Interest Income and Other Income. Net Sales is adjusted for the difference in Accounts Receivable. See Page C-3 for details.

To estimate sales receipts for the year ahead forecast, the key element besides Net Sales is a forecasted ending Accounts Receivable balance. The beginning Accounts Receivable balance is already known; it is the ending Accounts Receivable balance from the baseline time period. The forecasted Accounts Receivable ending balance is estimated by dividing the Net Sales forecast by the Accounts Receivable Turnover. See Page C-6 for details.

The two remaining parts of the cash inflow picture to be forecast are: Interest Income and Other Cash Inflows. The model's default value for Interest Income is shown on the Information Screen (Page C-7). Other Cash Inflows is income not accounted for elsewhere in the model, such as income from the Sale of Assets, or other Non-Operational Income.

### 3.2.2

### CASH OUTFLOWS

The total cash flowing out from the contractor is the sum of the Subtotal of Expense Disbursements, Change in Inventory, Capital Spending, Interest Expense, Repayment Current Debt, Taxes Paid, and Other Cash Outflows.

The Subtotal of Expense Disbursements adds the Cost of Sales (adjusted for Accounts Payable) and General and Administrative (G & A), then subtracts Depreciation. (NOTE: Depreciation can only be subtracted here if the contractor has previously included it in either Cost of Sales or G & A). See Page C-10 for details. The model incorporates the Change in Inventory to account for how expenses have been affected by whether the contractor is increasing or decreasing inventory. See Page C-16 for details.

To estimate the Subtotal of Expense Disbursements for the year ahead forecast, the key elements are a forecast for Net Expenses (Cost of Sales), a forecast of G & A expenses and a forecasted ending Accounts Payable balance. A forecast for Depreciation should come from the contractor, but the Information Screen shows an alternative estimating method (Page C-15).

The model projects Net Expenses (Cost of Sales) using the concept of Gross Margin (See Page C-11). The beginning Accounts Payable balance is already known; it is the ending Accounts Payable from the baseline time period. The forecasted Accounts Payable ending balance is estimated by dividing Net Expenses (Cost of Sales) plus G & A, for the Forecast Year, by the Accounts Payable Turnover.

Although not a conventional estimating technique, Accounts Payable Turnover is logically similar to Accounts Receivable Turnover and is detailed on Page C-14.

To forecast the Change in Inventory, only an estimate for the ending Inventory Balance is needed, since the beginning Inventory Balance is the ending balance from the prior (Baseline) period. The estimate for the ending Inventory Balance uses the concept of Inventory Turnover, see Page C-18 for details.

The forecast for Capital Spending and Repayment of Current Debt should come from the contractor. If the contractor cannot provide these forecasts, Pages C-19 and C-21 describe acceptable default values. Page C-20 guides the price analyst on how to estimate Interest Expense. Taxes Paid are automatically estimated by the model based on projected Taxable Income from the forecast. The marginal tax rates used to compute this figure are in the Information Screen. See Page C-22 for details.

### 3.2.3

#### **MODEL OUTPUT**

After the body of the spreadsheet, the model displays several calculations to help the price analyst draw some conclusions. The first piece of information is the Total Cash Inflow (or Outflow if the figure is negative), for both the Current Financial Statements and the Annual Forecast. This simply is the difference between the Cash Inflows and the Cash Outflows. It indicates if the contractor is making or losing money, without the benefit of any other financing. The Cash On Hand figure shown next does not account for contractor financing and differs from the Total Cash Inflow (Outflow) in that it accounts for a previous Cash On Hand balance. This figure shows what the contractor's total cash position is at a point in time (either for the period covered by the Current Financial Statements or for the Annual Forecast).

The next two figures account for the contractors plans for financing in the Forecast Period. The estimate for Financings (Debt or Equity) will come from the contractor. Financings can be either long or short term. There may be a long term financing even if there is a cash surplus. If there is a shortfall, it is probable that the contractor will plan a financing. The Cash on Hand (With Financing) figure is simply a revised cash on hand figure that adds the financing projections from the contractor to the Cash on Hand (W/O Financing).

### 3.2.4

#### **CONTRACT PROPOSAL**

The last section of the model accounts for the impact of the proposed contract. The Annual Contract Expense and Estimated Progress Payments are inputs from either the contractor or the price analyst. It is important to remember that these elements

must be annual figures entered in thousands to keep them compatible with the rest of the spreadsheet. The Information Screens provide guidance to help the price analyst make estimates of these items.

The next two calculations show the cash available to the contractor (first without further financing, then with the financings projected by the contractor), after accounting for the proposed contract. The figures at the bottom of the spreadsheet calculate the Cash on Hand percentages (both with and without Financing) of Net Sales. Section 5, Conclusions and Recommendations, contains guidance concerning how to use this information.

## SECTION 4

### MAJOR ASSUMPTIONS

Since this model forecasts a contractor's future cash flow from mostly historical data, there are several major assumptions underlying the entire process. Foremost among these assumptions is that the CFFM is being used because the contractor cannot, for whatever reason, provide the price analyst with a cash flow forecast for analysis. (However, even if the contractor provides a cash flow forecast, the price analyst can use the CFFM for an independent assessment of the contractor's forecasts.)

In developing the forecast with the CFFM, the contractor can provide valuable input by forecasting several of the model's key elements. (They are: Net Sales, Depreciation, Capital Spending, and Repayment of Current Debt.) These elements are best forecast by the contractor because they reflect the future environment known only to the contractor. A key assumption here is that the contractor has the ability to accurately forecast the next year.

If the contractor does not provide the requested forecasts, the price analyst selects default values. This leads to the assumption that these default values approximate the next year's actual data. (Lacking any other input, it could be valid to assume that the next year's forecast is the same as the annualized figure for the last historical period.)

Similarly, when the CFFM estimates elements from other data elements, the model assumes the historical relationships used in the conventional estimating techniques reflect the future conditions. Techniques such as Gross Margin, Accounts Receivable and Inventory Turnover use the relationships from the Baseline Period and apply them to the Net Sales forecast. For example, Accounts Receivable Turnover is the ratio of the Baseline Period Net Sales (annualized to make it compatible for a year ahead forecast) to the average Accounts Receivable, also for the Baseline Period. The product of this ratio and the Net Sales forecast (either from the contractor or a default value), is the forecast for the Accounts Receivable Ending Balance.

There are also assumptions made in the area dealing with the impact of the proposed contract. If the contractor does not provide the estimates for Annual Contract Expense and Progress Payments, the price analyst calculates default values. The assumption is that these values for the proposed contract are appropriate.

Since the forecast is just for one year ahead, there are assumptions to be made if the life of the proposed contract exceeds one year. The model assumes that the contractor is going

to incur most of the costs (due to startup and materials) during the first year. Under this assumption, if the contractor is projected to have enough cash for the one year forecast, they will be able to perform on the entire contract.

## **SECTION 5**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 USE CASH FLOW FORECASTING**

A good cash flow forecast will alert the government about a contractor who is likely to run out of funds needed to perform the contract. The CFFM uses conventional forecasting techniques and will allow all price analysts to use cash flow analysis as an additional tool to evaluate a contractor's financial capability. Even if the contractor provides a cash flow forecast, the price analyst can use the CFFM as an unbiased, independent assessment of the contractor's forecasts.

#### **5.2 DECISION-MAKING CRITERIA**

The percentage that the final cash flow, accounting for the impact of the proposed contract, is of the estimated Net Sales is the key to evaluating financial capability (See Page C-30 for details). In general, if the percentage is greater than -10% (e.g., -20%, -35%, etc.), the contractor probably will not have enough cash to complete this contract, unless the contractor can generate more financing than originally planned. As with any other financing needed by the model to sustain adequate cash flows, the contractor must provide a letter from a lending institution or other acceptable documentation.

#### **5.3 INTERFACE WITH THE CONTRACTOR**

If a contractor takes exception to the use of this model as part of the financial capability evaluation, ask them again for their own cash flow forecast. DCMC price analysts only use the CFFM to develop a forecast if the contractor does not give them a cash flow forecast. Should the contractor now develop a cash flow forecast, and the results are substantially different than those provided by the CFFM, evaluate the underlying assumptions of the contractor's cash flow forecast and ascertain their validity. If the assumptions appear valid, use the contractor's cash flow forecast in the financial capability evaluation.

If the contractor still cannot provide the price analyst with a cash flow forecast, there is still much valuable information they can provide. If default values were used for any data normally provided by the contractor, try to talk them through what kind of information is expected. If this fails, ask them if there is anything unacceptable about the default values used. The price analyst may be able to show the contractor the value of cash flow forecasting, and may get a complete forecast from the contractor the next time it is needed.

APPENDIX A  
SAMPLE SPREADSHEET





APPENDIX A  
SAMPLE SPREADSHEET  
Forecast of Cash Flow and Cash Balance  
(\$ Thousands)

	Source	Current Financial Statements	Annual Forecast
<b>Cash Inflows:</b>			
Subtotal Sales Receipts:		5,030	8,295
Net Sales	P & L	5,273	8,400
+ Acc Rec Beg Balance	Bal Sht	1,043	1,286
- Acc Rec End Balance	Bal Sht	1,286	1,391
Interest Income	P & L	267	2
Other	P&L, Bal Sht	0	0
Total Cash Inflows	Calculated	5,297	8,297
<b>Cash Outflows:</b>			
Subtotal Expense Disb	Calculated	5,136	9,162
Net Exp (Cost of Sales)	P & L	5,134	8,179
General & Admin	P & L	689	1,098
+ Acc Pay Beg Balance	Bal Sht	1,360	1,957
- Acc Pay End Balance	Bal Sht	1,957	1,982
- Depreciation	P & L	90	90
Change in Inventory		(416)	784
- Beg Balance	Bal Sht	3,167	2,751
+ End Balance	Bal Sht	2,751	3,535
Capital Spending	Cap Bud	100	100
Interest Expense	P & L	186	186
Repayment Current Debt	Debt Sched	233	233
Taxes Paid	P & L	0	0
Other	P&L, Bal Sht	0	0
Total Cash Outflows	Calculated	5,239	10,465
Total Cash Inflow (Outflow)	Calculated	58	(2,168)
Cash on Hand (W/O Financing)	Bal Sht	71	(2,097)
Financings (Debt or Equity)	Debt Sched	N.A.	0
Cash on Hand (With Financing)		N.A.	(2,097)
<b>Contract Proposal</b>			
Annual Contract Expense		N.A.	10
Estimated Prog Payments		N.A.	0
Cash on Hand W/O Financing		N.A.	(2,107)
Cash on Hand With Financing		N.A.	(2,107)
% Cash On Hand (W/O Fin) to Net Sales		N.A.	-25%
% Cash On Hand (With Fin) to Net Sales		N.A.	-25%

APPENDIX B

CASH FLOW FORECASTING MODEL (CFFM) USER'S GUIDE



## CASH FLOW FORECASTING MODEL (CFFM) USER'S GUIDE

### SECTION 1 OVERVIEW

The Cash Flow Forecasting Model (CFFM) is a spreadsheet template. It develops a cash flow forecast from contractor data and price analyst assumptions or estimates. It is designed to help the price analyst evaluate the contractor's financial capability during Preaward surveys or Postaward analysis. A series of Information Screens explains: where to get the required data, how to derive default data values, and the formulas used for forecasting.

The model uses mostly conventional, textbook algorithms to develop a one year ahead cash flow projection. The required data includes current financial statements and certain projections made by the contractor (or for the contractor by the price analyst) e.g., a one year forecast of Net Sales.

The CFFM comes in 2 versions: one for Enable, one for Lotus 123. Both versions, when printed out, fit on a single page.

### SECTION 2 USING THE CASH FLOW FORECASTING MODEL (CFFM)

The CFFM is called up from either Lotus 123 or Enable like any other spreadsheet. Each user should make a "master" copy of the spreadsheet. A separate worksheet should then be saved for each Preaward survey or Postaward analysis. The "original" worksheet you received was preloaded with zeroes at all the data input points and formulas and forecast algorithms where applicable.

**WARNING: IF YOU INPUT OVER A FORMULA OR FORECAST ALGORITHM, THE FORMULA OR FORECAST ALGORITHM IS LOST.** Most of the forecast algorithms have a feature which allows recovery of the formulas if overwritten by the user.

Before using the CFFM for the first time, run through each cell to get an idea which cells are input and which contain formulas. An Information Screen is available for each cell containing input or a formula. In other words, there is an Information Screen corresponding to each data value cell. **For the Lotus version of the CFFM, all Information Screens are accessed by pressing "Alt" and "i" simultaneously. For the Enable version, press "Shift" and "F9" simultaneously, then "i".**

The Information Screens are designed to supplement this User's Guide as an on-line tool. They tell the financial analyst where the required information is typically found, what formulas were

used to calculate certain subtotals, and the algorithms used to determine the automatically generated forecasts.

An added feature of some of the Information Screens for the forecast column is the ability to return the formula for the automatically generated forecast back to the spreadsheet if another value had been selected. This feature is activated simply by entering "p" (without the quotation marks) in response to the question concerning whether you wish to go back to the Pro Forma forecast values (and formulas).

Additional input and some intermediate calculations are contained in the area to the right of the main worksheet (cells N8 to U23). The following **WARNING** applies once again: **IF YOU INPUT OVER A FORMULA OR FORECAST ALGORITHM, THE FORMULA OR FORECAST ALGORITHM IS LOST.** The difference in this area is that there is no feature to recapture the Pro Forma formulas if they are overwritten. The text to the right of the actual numbers/formulas in this area, is the narrative definition of the number/formula. Additional help is also available on the Information Screens for the elements using the cells in this area.

There are two inputs required by the spreadsheet in this area (cells N8 and N10). The number of months in the baseline reporting period is necessary because the most current financial statements may not cover an entire year. This allows the price analyst to use the most current data possible, but annualize these historical figures when necessary to calculate turnover measures. It is not suggested that this data be used if the interim period is less than six months. This would be too small a base period from which to be able to make reasonable projections. (Using the prior year's data would probably be better.) The other input is the interest rate on the cash balance, which is to be estimated by the financial analyst. This is used in the forecast to generate an estimate of the Interest Income by multiplying this rate by the Cash on Hand for the previous period.

Also in this area (cells N11 to U23) are the formulas and definitions for the interim steps, including some of the model's conventional estimating techniques. The estimating techniques detailed here are: Inventory Turnover, Accounts Receivable Turnover, Accounts Payable Turnover, and Gross Margin. The only technique that isn't strictly conventional is Accounts Payable Turnover, but it is logically patterned after the Accounts Receivable Turnover technique.

If using the Lotus version of the CFFM, print a copy of the spreadsheet containing the complete model by pressing "Alt" and "p" simultaneously. For the Enable version press "Shift" and "F9" simultaneously, then "p".

### **SECTION 3 THE ANNUAL FORECAST**

The key to the entire forecast is the accuracy of the Net Sales estimate for the Forecast Year. Many of the estimates are derived, either directly or indirectly, from Net Sales. Use the Net Sales forecast provided by the contractor. If the contractor does not cooperate and provide this forecast, acceptable default estimates would be: the prior year's sales, annualized year-to-date, or trended forecast (this is also on the Net Sales Information Screen). (The choice should be based on the judgement of the price analyst.) Other data requiring contractor input are Capital Spending, Depreciation and repayment of current portion of short and long term debt. If the contractor cannot, or will not, provide this data, the Information Screens also suggest default values for each of these projections.

### **SECTION 4 CONCLUSIONS FROM THE MODEL**

The figures at the bottom of the spreadsheet calculate the percentages that the Cash on Hand (both with and without Financing) are of the estimate of Net Sales. If either percentage is less than  $\pm 10\%$  (between  $+10\%$  and  $-10\%$ ), the cash flow forecast differential is probably not significant enough to recommend no award. If the percentage is greater than  $+10\%$ , the contractor should have enough cash to perform the contract. If the percentage is greater than  $-10\%$  (e.g.,  $-20\%$ ,  $-35\%$ , etc.), the contractor probably will not have enough cash to complete this contract, unless the contractor can generate more financing than originally planned. If the results seems contradictory to other analysis performed for this evaluation, check the forecasted Net Sales figure (particularly if a default value was used). This is the key part of the forecast and drives other elements of the forecast. The other values that require input from the contractor should also be checked, particularly if default values were used. If default values were used because the contractor would not provide forecasts, ask the contractor again for another forecast. The results of the cash flow with the default values could be used as justification for the necessary forecasts. If a contractor takes exception to the use of this model as part of the financial capability evaluation, ask the contractor for his cash flow forecast. The reason this model is used is because the contractor will not or cannot provide us with his own forecast.

A good cash forecast will alert the government about a contractor who is likely to run out of funds needed to perform the contract. Ratio analysis leaves a much greater probability of flagging as likely to perform THOSE WHO CANNOT and not likely to perform THOSE WHO CAN.

**APPENDIX C**  
**TEXT OF HELP SCREENS**





Subtotal Sales Receipts (For Baseline Period, Current Fin Statement)

This accounts for the inflows from sales and is a calculated figure. The formula to derive this figure simply starts with Net Sales and adds the difference between the Beginning and Ending Accounts Receivable Balances.

Net Sales is taken from the income statement from the most recent year-to-date reporting period, provided the period is 6 months or more. If less than 6 months use most recent full fiscal year data.

If Accounts Receivable has increased, collections are decreased, therefore Sales Receipts are less than Net Sales. Likewise, if Accounts Receivable has decreased, collections are greater, therefore actual Sales Receipts are greater than Net Sales.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Subtotal Sales Receipts (For Forecast Year)

This accounts for the inflows from sales and is a calculated figure. The formula to derive this figure simply starts with Net Sales and adds the difference between the Beginning and Ending Accounts Receivable Balances.

If Accounts Receivable is forecasted to increase, collections decrease, and Sales Receipts decrease. Likewise, if Accounts Receivable is forecasted to decrease, collections increase, therefore actual receipts are greater than Net Sales.

TO RETURN TO THE SPREADSHEET, HIT ENTER

Net Sales (For Baseline Period, Current Financial Statement)

Net Sales is the starting point for cash inflow calculations.

Net Sales is taken from the income statement from the most recent year-to-date reporting period, provided the period is 6 months or more. If less than 6 months use most recent full fiscal year data.

In some cases it will be necessary to add miscellaneous income and account for cash discounts in this figure.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Net Sales (For Forecast Year)

Net Sales is a forecast received from the contractor. An accurate sales forecast is the key to the entire cash forecast since many of the other figures are calculated from Net Sales. It is the starting point for cash inflow calculations.

If a forecast of Net Sales is not provided by the contractor, use a best estimate based on one of the following:

- Same as Prior Year
- Year-to-date annualized
- A trended forecast

TO RETURN TO THE SPREADSHEET, HIT ENTER

Accounts Receivable Beginning Balance (For Baseline Period,  
Current Financial Statement)

This balance is taken from the balance sheet for reporting period  
IMMEDIATELY PRECEDING the Baseline Period. For example, if the  
Baseline Period is 9 months of FY 1992, or FY 1992, use the FY 1991  
Balance sheet to get the Accounts Receivable Beginning Balance.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Accounts Receivable Beginning Balance (For Forecast Year)

The Beginning Accounts Receivable Balance for the Forecast Year  
is the Ending Balance from the Current Financial Statement  
of the Baseline Period (Cell D12).

TO RETURN TO THE SPREADSHEET, HIT ENTER

Accounts Receivable Ending Balance (For Baseline Period,  
Current Financial Statement)

The ending Accounts Receivable Balance is taken from the  
Baseline Period financial statement.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Accounts Receivable Ending Balance (For Forecast Year)

This figure is calculated automatically by dividing the Forecasted Net Sales (G10) by the Accounts Receivable Turnover (N15). The Accounts Receivable Turnover is the annualized Baseline Period Net Sales divided by the Average Accounts Receivable. Average Accounts Receivable is the beginning balance Accounts Receivable plus the ending balance Accounts Receivable, For the Baseline Period, divided by 2.

If you find you want to go back to using the Pro Forma automatic calculations, enter (p) and you will return to the spreadsheet with the figures as calculated before changes were made.

TO RETURN TO THE SPREADSHEET WITHOUT MAKING ANY CHANGES, HIT ENTER

Interest Income (For Baseline Period, Current Financial Statement)

This figure is from the Baseline Period income statement and represents interest on cash balances and possibly other investments.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Interest Income (For Forecast Year)

This figure is calculated by multiplying the Interest Rate (N10) by the Cash On Hand balance from the Baseline Period.

If you find you want to go back to using the Pro Forma automatic calculations, enter (p) and you will return to the spreadsheet with the figures as calculated before changes were made.

TO RETURN TO THE SPREADSHEET WITHOUT MAKING ANY CHANGES, HIT ENTER

Other Cash Inflows (For Baseline Period, Current Fin Statement)

This figure is other income not accounted for elsewhere.

An example of such income is a gain from the Sale of Assets,  
receipt of an insurance claim, or other Non-Operating Income.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Other Cash Inflows (For Forecast Year)

This figure is other income not accounted for elsewhere.

An example of such income is a gain from the Sale of Assets,  
receipt of an insurance claim, or other Non-Operating Income.

TO RETURN TO THE SPREADSHEET, HIT ENTER

Total Cash Inflows (For Baseline Period, Current Fin Statement)

This subtotal is the amount of cash flowing into the contractor. It is calculated simply as the sum of Subtotal Sales Receipts, Interest Income and Other Cash Inflows.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Total Cash Inflows (For Forecast Year)

This subtotal is the amount of cash flowing into the contractor. It is calculated simply as the sum of Subtotal Sales Receipts, Interest Income and Other Cash Inflows.

TO RETURN TO THE SPREADSHEET, HIT ENTER



Subtotal Expense Disbursements (For Baseline Period, Current Financial Statement)

This disbursements subtotal is the sum of Cost of Sales plus General and Administrative, plus Accounts Payable at the beginning of the period, less Accounts Payable at the end of the period, less Depreciation. Depreciation is deducted because it is a non-cash expense. Adding beginning Payables adjusts for expenses incurred last period that must be PAID this period. Subtracting ending Payables adjusts for expenses incurred this period that will be paid in a future period.

NOTE: Make sure Depreciation is included by the contractor in either Cost of Sales or G & A, otherwise don't deduct Depreciation here.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Subtotal Expense Disbursements (For Forecast Year)

This disbursements subtotal is the sum of Cost of Sales plus General and Administrative, plus Accounts Payable at the beginning of the period, less Accounts Payable at the end of the period, less Depreciation. Depreciation is deducted because it is a non-cash expense. Adding beginning Payables adjusts for expenses incurred last period that must be PAID this period. Subtracting ending Payables adjusts for expenses incurred this period that will be paid in a future period.

NOTE: Make sure Depreciation is included by the contractor in either Cost of Sales or G & A, otherwise don't deduct Depreciation here.

TO RETURN TO THE SPREADSHEET, HIT ENTER

Net Expenses (Cost of Sales) [For Baseline Period, Current Financial Statement]

This expense is taken from the income statement from the most recent year-to-date reporting period, provided the period is 6 months or more. If less than 6 months, use most recent full fiscal year data.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Net Expenses (Cost of Sales) [For Forecast Year]

This expense is projected to be equal to Net Sales, for the Forecast Year, times 1 minus the Gross Margin (expressed as a decimal).  
Gross Margin is equal to (Sales Less Cost of Goods Sold)/Sales.

Essentially then, Cost of Sales are projected as a percent of Net Sales. The percent, (100 - Gross Margin), is derived from baseline period.

TO RETURN TO THE SPREADSHEET, HIT ENTER

General & Administrative Expense (For Baseline Period, Current Financial Statement)

This expense is taken from the income statement from the most recent year-to-date reporting period, provided the period is 6 months or more. If less than 6 months, use most recent full fiscal year data.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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General & Administrative Expense (For Forecast Year)

This expense is projected as the Baseline Period General & Administrative percent of Net Sales times the Net Sales for the Forecast Period.

If you find you want to go back to using the Pro Forma automatic calculations, enter (p) and you will return to the spreadsheet with the figures as calculated before changes were made.

TO RETURN TO THE SPREADSHEET WITHOUT MAKING ANY CHANGES, HIT ENTER

Accounts Payable Beginning Balance (For Baseline Period, Current Financial Statement)

This balance is taken from the balance sheet for reporting period IMMEDIATELY PRECEDING the Baseline Period. For example, if the Baseline Period is 9 months of FY 1992, or FY 1992, use the FY 1991 balance sheet to get the Accounts Payable Beginning Balance.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Accounts Payable Beginning Balance (For Forecast Year)

The Beginning Accounts Payable Balance for the Forecast Year is the Ending Balance from the Current Financial Statement of the Baseline Period (Cell D23).

TO RETURN TO THE SPREADSHEET, HIT ENTER

Accounts Payable Ending Balance (For Baseline Period, Current Financial Statement)

This balance is taken from the balance sheet for Baseline Period.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Accounts Payable Ending Balance (For Forecast Year)

This balance is projected by dividing Net Expenses (Cost of Sales) plus General & Administrative (G & A) for the Forecast Year by the Accounts Payable Turnover calculated for the Baseline Period.

Accounts Payable Turnover is calculated as annualized Net Expenses (Cost of Sales) plus G & A divided by average Accounts Payable for the Baseline Period.

If you find you want to go back to using the Pro Forma automatic calculations, enter (p) and you will return to the spreadsheet with the figures as calculated before changes were made.

TO RETURN TO THE SPREADSHEET, HIT ENTER

Depreciation (For Baseline Period, Current Financial Statement)

This figure is from the most current operating statement. In the cash flow statement Depreciation is the offset to Capital Spending.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Depreciation (For Forecast Year)

Ideally, this figure is a forecast from the contractor. If the contractor cannot provide this forecast, an acceptable estimate would be to make the forecast the same as the current figure for Depreciation.

TO RETURN TO THE SPREADSHEET, HIT ENTER

#### Change in Inventory (For Baseline Period, Current Financial Statement)

This figure is calculated from the Beginning and Ending Inventory Balances found in current operating statements.

If the change is positive (the inventory is increasing), the contractor is incurring costs for material which has not yet been sold. This results in an additional cash outflow. Conversely, if the change is negative (the inventory is decreasing), the contractor is increasing sales with material that has been paid for previously (costs are not reflected in current operating statements). This essentially makes this figure a cash inflow.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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#### Change in Inventory (For Forecast Year)

This figure is calculated from the Beginning and Ending Inventory Balances as forecasted (by either the contractor or the model).

If the change is positive (the inventory is increasing), the forecast indicates the contractor expects to incur costs for material which have not yet been sold. This results in an additional cash outflow. Conversely, if the change is negative (the inventory is decreasing), the forecast indicates the contractor expects to increase sales with material that has been paid for previously (costs are not reflected in the forecasted figures). This essentially makes the negative change a cash inflow.

TO RETURN TO THE SPREADSHEET, HIT ENTER

Inventory Beginning Balance (For Baseline Period, Current Fin Statement)

The Beginning Inventory Balance is from the Balance Sheet for the previous period.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Inventory Beginning Balance (For Forecast Year)

The Beginning Inventory Balance for the Annual Forecast is the Ending Balance from the Current Financial Statement of the Baseline Period (Cell C12).

TO RETURN TO THE SPREADSHEET, HIT ENTER



Inventory Ending Balance (For Baseline Period, Current Fin Statement)

The Ending Inventory Balance is from the most current operating statement.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Inventory Ending Balance (For Forecast Year)

This ending balance is estimated by dividing the forecasted Net Expense (Cost of Sales) (G20) by the Inventory Turnover (N13). The Inventory Turnover is simply the annualized figure for Cost of Goods Sold  $((12/N8)*D20)$  divided by the Average Inventory from the Baseline Period  $((D27+D28)/2)$ .

If you find you want to go back to using the Pro Forma automatic calculations, enter (p) and you will return to the spreadsheet with the figures as calculated before changes were made.

TO RETURN TO THE SPREADSHEET WITHOUT MAKING ANY CHANGES, HIT ENTER

Capital Spending (For Baseline Period, Current Fin Statement)

This figure is from the most current operating statement. In the cash flow statement Capital Spending is the offset to Depreciation.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Capital Spending (For Forecast Year)

Ideally, this figure is a forecast from the contractor. If the contractor cannot provide this forecast, acceptable estimates would include: same as last year, same as the forecast for Depreciation. DO NOT INCLUDE planned Capital Spending for just the proposed contract, since it will be accounted for under Annual Contract Expense. Enter the Capital Spending estimate as a positive value.

TO RETURN TO THE SPREADSHEET, HIT ENTER

Interest Expense (For Baseline Period, Current Fin Statement)

This expense is taken from the income statement from the most recent year-to-date reporting period, provided the period is 6 months or more. If less than 6 months, use most recent full fiscal year data.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Interest Expense (For Forecast Year)

This may be estimated by multiplying the estimated average interest rate for short term borrowing by the estimated average short term borrowing balance to get interest on short term debt, and then performing the corresponding calculation for long term debt and adding the two interest expense estimates.

TO RETURN TO THE SPREADSHEET, HIT ENTER

Repayment of Current Debt (For Baseline Period, Current Fin Statement)

This figure is taken from the balance sheet for Baseline Period.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Repayment of Current Debt (For the Forecast Year)

This figure should be taken from debt amortization and repayment schedules provided by the contractor. If not available, use last year's repayment unless it (either long or short term) exceeds the amount outstanding.

TO RETURN TO THE SPREADSHEET, HIT ENTER

Taxes Paid (For Baseline Period, Current Financial Statement)

This expense is taken from the income statement from the most recent year-to-date reporting period, provided the period is 6 months or more. If less than 6 months, use most recent full fiscal year data.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Taxes Paid (For Forecast Year)

Taxes are computed based on projected Taxable Income for the Forecast Year. The projected tax to be paid is obtained using the marginal tax rates in the following table to compute the tax in each bracket and then summing these amounts to get the total projected tax.

TAXABLE INCOME	MARGINAL TAX RATE
UP TO 50,000	15%
50,001 - 75,000	25%
75,001 - 100,000	34%
100,001 - 335,000	39%
OVER 335,000	34%

If you find you want to go back to using the Pro Forma automatic calculations, enter (p) and you will return to the spreadsheet with the figures as calculated before changes were made.

TO RETURN TO THE SPREADSHEET WITHOUT MAKING ANY CHANGES, HIT ENTER

Other Cash Outflows (For Baseline Period, Current Fin Statement)

This figure is other outflows not accounted for elsewhere.

An example of this type of an expense could be the payment of a major lawsuit, cash (but not stock) dividends or other Non-Operating outflows.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Other Cash Outflows (For Forecast Year)

This figure is other outflows not accounted for elsewhere.

An example of this type of an expense could be the payment of a major lawsuit, cash (but not stock) dividends, or other Non-Operating outflows.

TO RETURN TO THE SPREADSHEET, HIT ENTER

Total Cash Outflows (For Baseline Period, Current Fin Statement)

This subtotal is the amount of cash flowing out from the contractor. It is calculated simply as the sum of Subtotal Expense Disbursements, Change in Inventory, Capital Spending, Interest Expense, Repayment Current Debt, Taxes Paid, and Other Cash Outflows.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Total Cash Outflows (For Forecast Year)

This subtotal is the amount of cash flowing out from the contractor. It is calculated simply as the sum of Subtotal Expense Disbursements, Change in Inventory, Capital Spending, Interest Expense, Repayment Current Debt, Taxes Paid, and Other Cash Outflows.

TO RETURN TO THE SPREADSHEET, HIT ENTER

Total Cash Inflow (Outflow) [For Baseline Period, Current Financial Statement]

This figure represents the total amount of cash generated (or consumed, if negative) for the baseline period. This is a calculated figure that simply subtracts the Total Cash Outflows (E35) from the Total Cash Inflows (E15).

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Total Cash Inflow (Outflow) [For Forecast Year]

This figure represents the total amount of cash generated (or consumed, if negative) for the forecast year. This is a calculated figure that simply subtracts the Total Cash Outflows (H35) from the Total Cash Inflows (H15).

TO RETURN TO THE SPREADSHEET, HIT ENTER



Cash on Hand (W/O Financing) [For Baseline Period, Current Financial Statement]

This comes from the most current Balance Sheet, and may be defined to also include cash equivalents, such as money market instruments.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Cash on Hand (W/O Financing) [For Forecast Year]

This calculation starts with the Cash on Hand (W/O Financing) figure from the Balance Sheet (E39) for the immediately preceding reporting period and adds the Total Cash Inflow (Outflow) (H37) for the forecast year. If this figure is negative, the forecast is indicating that the contractor probably will not have enough cash at the end of the forecasted year. This means the contractor may have to take some action in the forecast year, for example, sell an asset, borrow more if possible, etc.

TO RETURN TO THE SPREADSHEET, HIT ENTER

Financings (Debt or Equity) [For Forecast Period]

This estimate will come from the contractor. Financings can be either long or short term. There may be a long term financing even if there is a cash surplus. If there is a shortfall, it is probable that the contractor will plan a financing.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Cash on Hand (With Financing) [For Forecast Year]

This is a revised cash on hand figure that adds the financing projections from the contractor (H41) to the Cash on Hand (W/O Financing) (H39).

TO RETURN TO THE SPREADSHEET, HIT ENTER

#### Annual Contract Expense (Contract Proposal)

Ideally this is an estimate made by the contractor. To keep this figure compatible with other portions of this spreadsheet, it is shown in thousands of dollars. This element of the cash flow accounts for the additional costs the contractor will incur for the next year if they get the award under consideration. If the contractor doesn't provide this estimate, the Operations Analyst doing the Industrial Support portion of the Preaward Survey should have the production and delivery schedule information necessary to make an estimate. Among the information to consider: First Article requirements (including whether it is priced or unpriced), timing of when material and other costs will (may) be incurred, delivery schedule (steady, one time at end of contract, staggered, etc.), and possible capital expenditures not specified under the Capital Spending block above. Don't account for Progress Payments eligibility for the bid here, it is a separate item in the next block of this spreadsheet.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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#### Estimated Progress Payments (Contract Proposal)

To keep this figure compatible with other portions of this spreadsheet, it is shown in thousands of dollars. The first steps in this estimate are to determine if the proposal allows progress payments, and if so, what the progress payment rate will be. Some information the Operations Analyst doing the Industrial Support portion of the Preaward Survey should have that the analyst should consider would include: First Article requirements (including whether it is priced or unpriced, when it is due, if the proposal allows contractor to incur specific costs other than those for the First Article before it is approved), timing of when material and other costs may be incurred, delivery schedule, (steady, one time at end of contract, staggered, etc.).

TO RETURN TO THE SPREADSHEET, HIT ENTER

Cash on Hand (W/O Financing) [Accounting for Contract Proposal]

This shows the cash available to the contractor, without further financing, after accounting for the proposed contract. This figure is derived by subtracting the impact of the contract being proposed (the annual shipments) (H46) less estimated progress payments (H47)) from the estimated Cash on Hand (W/O Financing) figure (H39).

TO RETURN TO THE SPREADSHEET, HIT ENTER

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Cash on Hand (With Financing) [Accounting for Contract Proposal]

This shows the cash available to the contractor, including the financing projections, after accounting for the proposed contract. It subtracts the impact of the contract being proposed (the annual shipments (H46) less estimated progress payments (H47)) from the estimated Cash on Hand (With Financing) figure (H42).

TO RETURN TO THE SPREADSHEET, HIT ENTER

\* Cash On Hand (W/O Fin) to Net Sales [Accounting for Contract Proposal]

This figure is simply the Cash On Hand (W/O Financing) (H52) as a percentage of the forecasted Net Sales (G10). If this percentage is between -10 and +10, look at the corresponding percentage with Financing. If the percentage is greater than +10, the contractor should have enough cash to perform the contract. If the percentage is greater than -10 (e.g., -20, -35, etc.) look at the corresponding percentage with Financing.

TO RETURN TO THE SPREADSHEET, HIT ENTER

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\* Cash On Hand (With Fin) to Net Sales [Accounting for Contract Proposal]

This figure is simply the Cash On Hand (With Financing) (H53) as a percentage of the forecasted Net Sales (G10). If this percentage is between -10 and +10, the cash flow is probably not significant enough to recommend no award. If the percentage is greater than +10, the contractor should have enough cash to perform the contract. If the percentage is greater than -10 (e.g., -20, -35, etc.) the contractor probably will not have enough cash to complete the contract, unless the contractor can generate more financing than originally planned.

TO RETURN TO THE SPREADSHEET, HIT ENTER

# REPORT DOCUMENTATION PAGE

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This report documents the development of a cash flow forecasting model for use throughout the Defense Logistics Agency Contract Management Command (DCMC). The cash flow model uses a spreadsheet format, acceptable for use DCMC-wide. It is a straightforward, easy to understand forecasting model that uses conventional, textbook estimating techniques.

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